

Serial No. 09/637,570

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REMARKS

Claims 1, 6 and 9 have been amended to overcome the rejection of claims 1-12 under 35 USC §112, second paragraph.

Claims 1-3, 9, 10, 13-15, 19 and 20 are rejected under 35 USC 103(a) as being unpatentable over Kaufman in view of Sun et al (US 6,451,697). Further, claims 4-8, 11, 12, 16-18 and 21 are rejected under 35 USC 103(a) as being unpatentable over Kaufman in view of Sun et al and Lee et al (US 6,303,049). Reconsideration of these rejections is requested for the following reasons.

The Examiner relies upon Kaufman for disclosing a polishing method by chemical mechanical polishing for a copper film. The polishing liquid disclosed by Kaufman contains an oxidizing substance, a phosphoric acid and a protection-layer forming agent. However, the reference does not disclose that copper is polished by a polishing solution containing both BTA and surfactants as a protection-layer forming agent, as in the present invention. See page 15, lines 12-16 of the specification. As amended, claim 1 sets forth that the protection-layer forming agent is comprised of an anticorrosive and a surfactant. Also, claim 9 as amended includes that the protection-layer forming agent is comprised of an anticorrosive, a surfactant and an abrasive. Claim 16,

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as amended, sets forth that the protection layer is formed with a forming agent comprised of benzotriazole and one selected from a group of polyacrylic acid, salt thereof and a bridged polymer thereof. Further, in claims 19 and 20, the protection-layer forming agent is claimed as being comprised of an anticorrosive and a surfactant. Accordingly, the independent claims describe a polishing method that is different from Kaufman in that Kaufman discloses that the surfactants are used as dispersion agents. However, Kaufman does not disclose the use of both BTA and surfactants as protection film forming agents in the polishing liquid.

The Examiner relies upon Sun et al for disclosing the etching of an abrasive free liquid and on Lee et al for disclosing the inhibiting of the formation of depressions on metal circuits that result from the processing of a semiconductor by a chemical-mechanical abrasive composition. However, none of Kaufman, Sun et al or Lee et al disclose that the metal to be polished is ionized and then made water soluble, as in the present invention. See page 15, line 22 - page 16, line 5 of the specification. Specifically, claim 1 sets forth the step of rendering an oxidized substance water soluble as a copper ion by phosphoric acid. Claim 6 also includes rendering an oxidized copper film water soluble by a

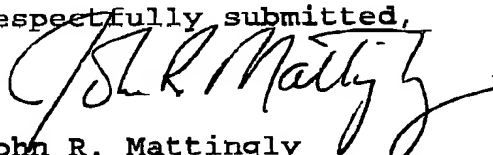
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phosphoric acid. In claim 9, the step of removing the second metal film includes rendering an oxidized metal water soluble by a phosphoric acid. In claims 13, 16, 19 and 20, the last two lines of each claim set forth that the oxidized second metal film is rendered water soluble by a phosphoric acid. Therefore, each of the independent claims is not obvious under 35 U.S.C. § 103 over Kaufman et al, whether considered in view of Sun et al and Lee et al and therefore claims 1-21 should be allowed.

In view of the foregoing amendments and remarks, reconsideration and reexamination are respectfully requested.

Respectfully submitted,



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